SYNTHESIS OF NOVEL ANTIMICROBIAL AGENTS CONTAINING PEPTIDE BONDS, P. J. Belmonte, L. Witucki*, R. Smart, W. Schroeder, R. Morgan, Grand Valley State University, Department of Chemistry, Allendale, MI 49401, wituckil@gvsu.edu

Antibiotics, produced naturally by microorganisms, have been used for decades in the battle against pathogenic microbes. Bacterial resistance to antibiotics is an ongoing medical issue throughout the world. In an effort to produce novel synthetic antimicrobial agents, amide bond synthesis techniques were used to affix an aliphatic carbon chain and an amino acid residue to an aromatic scaffold. Solution phase organic synthesis was utilized. Thin layer and column chromatography were used to determine reaction completion and purify products, respectively. Infrared and ^{1}H NMR spectroscopy were employed to characterize the structure of the molecules. The synthesized compounds were assayed for antimicrobial activity using *E. coli* (gram-negative) and *S. aureus* (gram-positive) bacteria. For multiple compounds, bioassay data suggested antimicrobial activity against gram-positive bacteria, and further analysis suggested one compound's low affinity for binding to human serum proteins. Further synthesis is targeted at dipeptide bond synthesis in an attempt to increase this compound's zone of inhibition.